

WE CLAIM:

1. A phosphorescent marine product comprising;
 - a marine article; and
 - a phosphorescent phosphor;wherein, the phosphorescent phosphor comprises MAI_2O_4 wherein M is at least one cation selected from a group consisting of calcium, strontium, and barium, wherein the phosphor comprises 0.001% to 10% of a europium activator, and wherein the phosphor comprises 0.001% to 10% of at least one dopant selected from the group consisting of lanthanum, cerium, praseodymium, neodymium, samarium, gadolinium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, tin and bismuth as a co-activator, in terms of mol % relative to the metal element expressed by M.
2. The phosphorescent marine product of claim 1, wherein the phosphorescent phosphor is incorporated into a tape and the tape is affixed to the marine article.
3. The phosphorescent marine product of claim 1, wherein the marine article comprises a polymer and the phosphorescent phosphor is incorporated into the polymer.
4. The phosphorescent marine product of claim 3, wherein the polymer is selected from the group consisting of polycarbonate, polyethylene, polypropylene,

polystyrene, polyurethane, copolymer of ethylene, copolymer of vinyl acetate, terpolymer of acrylonitrile, terpolymer of butadiene and terpolymer of styrene.

5. The phosphorescent marine product of claim 1, wherein the phosphorescent phosphor is incorporated into a paint and the paint covers at least a portion of the marine article.
6. The phosphorescent marine product of claim 5, wherein the paint comprises polyurethane.
7. The phosphorescent marine product of claim 1, wherein the marine article is a dock accessory selected from the group consisting of dock fenders, post fenders, bumpers, dock trim, step trim, cleats, ladders, post caps and dock lights.
8. The phosphorescent marine product of claim 1, wherein the marine article is a boat accessory selected from the group consisting of bumpers, sails, masts, lettering, numbering, marine rope, trailer guides, trailer rollers, ladders, covers, shift knobs, throttle knobs, steering wheels and instrument gauges.
9. The phosphorescent marine product of claim 1, wherein the marine article is a personal accessory selected from the group consisting of jackets, knives, coolers, drinking glasses, tools, and patches.

09778973-020604
FO9020-268260

10. The phosphorescent marine product of claim 1, wherein the marine article is a floatation device selected from the group consisting of buoys, buoy wraps, buoy caps, life jackets, floating key rings, ring buoy/life savers and floating cushions.
11. A phosphorescent marine product comprising;
- a buoy cap or a dock post cap; and
 - a phosphorescent phosphor;
- wherein, the phosphorescent phosphor comprises MAI_2O_4 wherein M is at least one cation selected from a group consisting of calcium, strontium, and barium, wherein the phosphor comprises 0.001% to 10% of a europium activator, and wherein the phosphor comprises 0.001% to 10% of at least one dopant selected from the group consisting of lanthanum, cerium, praseodymium, neodymium, samarium, gadolinium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, tin and bismuth as a co-activator, in terms of mol % relative to the metal element expressed by M.
12. A phosphorescent marine product comprising;
- a marine article; and
 - a phosphorescent phosphor;
- wherein, the phosphorescent phosphor has an afterglow corresponding to a luminance of at least 0.3 mCd/m^2 for at least about 420 minutes.

09778973-020601

13. The phosphorescent marine product of claim 12, wherein the phosphorescent phosphor is incorporated into a tape and the tape is affixed to the marine article.
14. The phosphorescent marine product of claim 12, wherein the marine article comprises a polymer and the phosphorescent phosphor is incorporated into the polymer.
15. The phosphorescent marine product of claim 14, wherein the polymer is selected from the group consisting of polycarbonate, polyethylene, polypropylene, polystyrene, polyurethane, copolymer of ethylene, copolymer of vinyl acetate, terpolymer of acrylonitrile, terpolymer of butadiene and terpolymer of styrene.
16. The phosphorescent marine product of claim 12, wherein the phosphorescent phosphor is incorporated into a paint and the paint covers at least a portion of the marine article.
17. The phosphorescent marine product of claim 16, wherein the paint comprises polyurethane.
18. The phosphorescent marine product of claim 12, wherein the marine article is a dock accessory selected from the group consisting of dock fenders, post fenders, bumpers, dock trim, step trim, cleats, ladders, post caps and dock lights.

0978973-020601
T09020"E68760

19. The phosphorescent marine product of claim 12, wherein the marine article is a boat accessory selected from the group consisting of bumpers, sails, masts, lettering, numbering, marine rope, trailer guides, trailer rollers, ladders, covers, shift knobs, throttle knobs, steering wheels and instrument gauges.
20. The phosphorescent marine product of claim 12, wherein the marine article is a personal accessory selected from the group consisting of jackets, knives, coolers, drinking glasses, tools, and patches.
21. A process for illuminating an article in a marine environment, comprising:
- selecting a phosphorescent phosphor capable of an afterglow corresponding to a luminance of at least 0.3 mCd/m^2 for at least 420 minutes; and
 - incorporating the phosphorescent phosphor within a marine article to form a phosphorescent marine article;
- wherein, the phosphorescent marine article is chemically stable and physically durable in an outdoor marine environment.

Add B37

Add B2